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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/785,764	02/16/2001	Robert B. Belshe	SLU 4538	2975

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EXAMINER	
SCHEINER, LAURIE A	
ART UNIT	PAPER NUMBER
1648	

DATE MAILED: 08/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/785,764	Belshe et al.
Examiner	**Art Unit**
Laurie Scheiner	1648

-- The MAILING DATE of this c mmunication appears on th cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Oct 10, 2001*.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under ***Ex parte Quayle***, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-4, 6-14, and 16-21* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☒ Claim(s) *4* is/~~are allowed~~. drawn to allowable subject matter.

6) ☒ Claim(s) *1-3, 6-11, and 16-18* is/are rejected.

7) ☒ Claim(s) *12-14 and 19-21* is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

Claims 1-4, 6-14 and 16-21 are currently pending.

Claims 12-14 and 19-21 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 16 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are improperly drafted since they directly depend from canceled claim 15.

Claim 4, if filed in independent form, is allowable.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-3, 6-11 and 16-18 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The written description requirement under Section 112, first paragraph, sets forth that the claimed subject matter must be supported by an adequate written description that is sufficient to enable anyone skilled in the art to make and use the invention. The courts have concluded that the specification must demonstrate that the inventor(s) had possession of the claimed invention

as of the filing date relied upon. Although the claimed subject matter need not be described identically, the disclosures relied upon must convey to those skilled in the art that applicants had invented the subject matter claimed. *In re Werthheim, et al.*, 191 U.S.P.Q. 90 (C.C.P.A. 1976). *In re Driscoll*, 195 U.S.P.Q. 434 (C.C.P.A. 1977). *Utter v. Hiraga*, 6 U.S.P.Q.2d 1709 (C.A.F.C. 1988). *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 U.S.P.Q.2d 1016-1031 (C.A.F.C. 1991). *Fiers v. Sugano*, 25 U.S.P.Q.2d 1601-1607 (C.A.F.C. 1993). The significance of conception and reduction to practice was further addressed by the court in *Fiers v. Sugano* where it was emphasized that "[c]onception is a question of law, reviewed *de novo* on appeal, and if inventor is unable to envision detailed chemical structure of DNA sequence coding for specific protein, as well as method of obtaining it, then conception is not achieved until reduction to practice has occurred, that is, until after gene has been isolated; thus, regardless of complexity or simplicity of method of isolation employed, conception of DNA sequence, like conception of any chemical substance, requires definition of that substance other than by its functional utility." Thus, the courts have emphasized that the inventor must clearly and unambiguously identify the salient characteristics and properties of any given claimed nucleotide sequence, or chemical substance (viral strain). It is not sufficient to provide a vague reference to the biological activity of any given chemical substance or merely a generic method of obtaining it.

Applicants' disclosure fails to provide adequate written support for the invention as broadly claimed; the claims of the instant invention are directed toward an isolated attenuated HPIV-2, and a vaccine comprising the virus. A method of inducing a protective immune response by administering the attenuated viral strain of claim 1 (HPIV-2) is also envisaged. The issue raised in this application is whether the original application provides adequate support for

the broadly claimed genus of isolated attenuated HPIV-2. An applicant shows possession of the claimed invention by describing the claimed invention with all of its limitations using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the claimed invention. Lockwood v. American Airlines Inc., 107 F.3d 1565, 1571-1572, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997). The claimed invention as a whole may not be adequately described where an invention is described solely as a method of its making coupled with its function and there is no described or art-recognized correlation or relationship between the structure of the invention and its function. A biomolecule sequence described only by functional characteristics, without any known or disclosed correlation between that function and the structure of the sequence, normally is not a sufficient identifying characteristic for written description purposes, even when accompanied by a method of obtaining the biomolecule of interest. *In re Bell,* 26 U.S.P.Q.2d 1529-1532 (C.A.F.C. 1993). A lack of adequate written description issue also arises if the knowledge and level of skill in the art would not permit one skilled in the art to immediately envisage the product claimed from the disclosed process. See, e.g., Fujikawa v. Wattanasin, 93 F.3d 1559, 1571, 39 U.S.P.Q.2d 1895, 1905 (Fed. Cir. 1995). The court noted in this decision that a "laundry list" disclosure of every possible moiety does not constitute a written description of every species in a genus because it would not reasonably lead those skilled in the art to any particular species.

An applicant may show possession of an invention by disclosure of drawings or structural chemical formulas that are sufficiently detailed to show that applicant was in possession of an invention by disclosure of drawings or structural chemical formulas that are sufficiently detailed, relevant identifying characteristics which provide evidence that applicant was in possession of the claimed invention as a whole. An applicant may also show that an invention is complete by

disclosure of sufficiently detailed, relevant identifying characteristics which provide evidence that applicant was in possession of the claimed invention, i.e., complete or partial structure, other physical and/or chemical properties, functional characteristics when coupled with a known or disclosed correlation between function and structure, or some combination of such characteristics. For some biomolecules, examples of identifying characteristics include a nucleotide or amino acid sequence, chemical structure, binding affinity, binding specificity, and molecular weight. The written description requirement may be satisfied through disclosure of function and minimal structure when there is a well-established correlation between structure and function. Without such a correlation, the capability to recognize or understand the structure from the mere recitation of function and minimal structure is highly unlikely. In the latter case, disclosure of function alone is little more than a wish for possession; it does not satisfy the written description requirement. Regents of the University of California v. Eli Lilly, 119 F.3d 1559, 1566, 43 U.S.P.Q.2d 1398, 1404, 1406 (Fed. Cir. 1997), cert. Denied, 523 U.S. 1089 (1998). In re Wilder, 736 F.2d 1516, 1521, 222 U.S.P.Q. 369, 372-3 (Fed. Cir. 1984). Factors to be considered in determining whether there is sufficient evidence of possession include the level of skill and knowledge in the art, partial structure, physical and/or chemical properties, functional characteristics alone or coupled with a known or disclosed correlation between structure and function, and the method of making the claimed invention.

Reviewing the disclosure reveals that three isolates (C3464, C3490, C3605) possessing both the cold adapted and temperature sensitive phenotypes have been taught. These are the only isolates described fully in the specification. The skilled artisan would reasonably conclude that applicants were in possession of these three viral isolates, however, there is no indication that said isolates provide a showing that applicants were in possession of an entire genus of

attenuated HPIV-2 isolates, and vaccines comprising said isolates. Thus, the genetic diversity associated with viral strain attenuation and stability has not been explored, commensurate in scope with the instant claims. Moreover, the issue of lack of reproducibility is raised since RNA genomes are known for their infidelity; similarly, weakly attenuated RNA strains are often revertant. Thus, the instant written description fails to support a genus of such breadth.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-3, 6-11 and 16-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Belshe et al. (US Patent 5,869,036).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the

inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Claim 1 is broadly drawn to an isolated, attenuated viral strain of HPIV-2. Belshe et al. clearly teach an isolated, live attenuated chimeric (or hybrid) human virus wherein HPIV-2 is the target virus. That is, although the genome of the virus is primarily derived from cp45, both surface antigens are encoded by HPIV-2 nucleic acids. As such, the chimeric falls within the scope of the claim as broadly drafted. Similarly, Belshe et al. clearly teach a live attenuated vaccine comprising said hybrid virus.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 6-11 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belshe et al. (Journal of Medical Virology 10:235-242 (1982)) in view of Belshe et al. (US Patent 5,869,036).

Belshe et al. teach isolated, cold adapted (attenuated) parainfluenza virus type 3, and methods of inducing the phenotype in a wild-type strain of HPIV-3.

Belshe et al. fail to teach isolated, attenuated parainfluenza virus type 2.

Belshe et al. (US Patent 5,869,036) teach isolated wild-type HPIV-2.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have applied the methods of attenuation of Belshe et al. (Journal of Medical Virology 10:235-242

(1982)) to the HPIV-2 isolate of Belshe et al. (US Patent 5,869,036) in order to attenuate parainfluenza virus 2. Attenuated viral strains are well known (as is their use as vaccines, and in assays for selecting candidate vaccines), and one of ordinary skill in the art at the time of the invention would have an expectation of success in their production since the specification clearly states (at page 8) that one of skill would be able to make and isolate attenuated clones from wild type HPIV-2 virus using routine methods. Again, the claims are not limited to any specific phenotype (merely a functional attenuation). Belshe et al. (Journal of Medical Virology 10:235-242 (1982)) clearly provide such routine methods of attenuation (for parainfluenza virus in general, HPIV-3, influenza A, and respiratory syncytial virus). It is noted that an argument of hindsight reconstruction, by applicants, would be inappropriate in view of the instant claims' breadth. That is, the specification was referenced for the admission, by applicants, of enablement (i.e., ability to make and use an attenuated HPIV-2 isolate by routine methods), and not for a motivation to combine the references since said motivation is found in the art. That is, it would have been obvious to have attenuated the HPIV-2 of the patent in accordance with the general methods of attenuation of the paper since one of skill would be motivated to make attenuated isolates for candidate vaccine selection.

Applicants' arguments with respect to the rejection under 35 U.S.C. 102(e) over Cates et al. are moot in view of the new grounds of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laurie Scheiner, whose telephone number is (703) 308-1122. Due to a flexible work schedule, the examiner's hours typically vary each day. However, the examiner can normally be reached Monday thru Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Housel, can be reached on (703) 308-4027.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group 1600 receptionist whose telephone number is (703) 308-0196.

Correspondence related to this application may be submitted to Group 1600 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). Official communications should be directed toward one of the following Group 1600 fax numbers: (703) 308-4242, (703) 305-3014, (703) 872-9306 or (703) 872-9307. Informal communications may be submitted directly to the Examiner through the following fax number: (703) 746-5226.

Laurie Scheiner/LAS
August 8, 2003

LAURIE SCHEINER
PRIMARY EXAMINER